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(54) MACHINE FOR CLEANING, WASHING, DRYING AND IRONING CLOTHES AND GARMENTS

MASCHINE ZUM REINIGEN, WASCHEN, TROCKNEN UND BÜGELN VON STOFFEN UND KLEIDUNGSSTÜCKEN

MACHINE POUR NETTOYER, LAVER, SÉCHER ET REPASSER DES VÊTEMENTS ET DU LINGE

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Description

Field of the Invention

[0001] This invention concerns the machines for the laundry sector which is for cleaning and washing bed linen, cloths and clothes in general and for final drying and ironing services.

State of the Technique

[0002] The most usually, at least, the washing machines for domestic use are provided exclusively for washing the bed linen, cloths and clothing (herein after simply defined as clothing).

[0003] These machines can be of various types as known from FR 2092259A and with different loading systems, but with them once the clothing, has been washed and possibly spin-dried to squeeze them, they must be unloaded and hung on the clothes horse to dry, before proceeding with final ironing using an iron.

[0004] Also well known are the so-called wash and dry machines where the clothing after being washed are dried with the help of hot air, but they still have to be collected and then ironed .

[0005] When however it is necessary to remove stains from some parts of an item of clothing, an operation usually carried out by hand and often solved by rubbing and consequently locally wearing the fabric, before it is put in the washing machine.

Objects and Summary of the Invention

[0006] One object of this invention is on the one hand to provide a machine for use in the abovementioned field and devised to carry out numerous functions, such as to remove stains, wash, dry and iron in succession different types of clothing, without having to remove them from the machine and collect them between one operation and another and with the advantage that neither a clothes horse or an iron are necessary required.

[0007] Another object is to provide a multi-function machine able to remove stains also in loco before the washing process, let alone specific and selective washings of the dirtiest parts of the clothing, in particular if garments.

[0008] Yet another object of the invention is to propose a multi-function machine usable for efficient cleaning both with water and for dry cleaning, using correct solvents, and possibly the sterilisation of the cleaned clothing.

[0009] A further object of the invention is to propose a machine able to intensify the stain removal action thanks to the spraying of fluids under pressure, movable to the clothing to be treated, however with the advantages of not wearing out the material, of consuming less detergent or solvents and therefore of reducing the running costs.

[0010] A further object of the invention is to propose a to remove stains, to clean, dry and iron where it is possible to define and limit the treatment zones enabling at least to save on energy, treatment fluid and detergents.

[0011] An additional object is to propose a machine in which the washing takes place under such conditions that the clothing treated does not have to be left to soak with the advantage of not attacking and altering the colours of coloured clothing and discharging non polluted washing fluid with colouring agents.

[0012] An added object of the invention is to propose a stain remover - cleaner - ironer - dryer machine in the configuration of a module which can be coupled with other similar modules to define their capacity based on the amount of clothing to be cleaned, dried and ironed.

[0013] The above object and advantages are achieved with a machine for cleaning stains, washing, drying and ironing according to claim 1. Other characterising aspects of the same machine become evident in the remaining claims depending on the first claim.

Brief Description of the Drawings

[0014] The invention will be illustrated in greater detail in the continuation of the description made in reference to the enclosed indicative and not limitative drawing, in which:

Fig. 1 shows an example of a machine in a schematic form according to the invention without clothing to be washed;
Fig. 2 shows a front view complete with clothing to be washed;
Fig. 3 shows a vertical cross section; and
Fig. 4 shows some examples of some hangers or shapes to hold the different items to be treated inside the machine.

Detailed Description of the Invention

[0015] In the example shown, the machine according to the invention comprises a body or frame 11 defining a treatment chamber 12 having, at least at the front, an access entrance.

[0016] This opening can be hermetically closed by at least one door which can also be transparent to make the interior of the machine visible and to be able to locate the dirtier parts which possibly need to be removed and to follow each washing cycle.

[0017] At the base of the body or frame 11 at least one compartment 13 is provided to house, although not shown, the equipment necessary to make the machine operate.

[0018] This equipment comprises at least a tank connected to a fresh water feed plant and to a discharge for the dirty washing water; a basin for the detergent; a water heating system; a pump to circulate the water; a hot air generator and control instrumentation.

[0019] In the treatment chamber 12 formed by the body or frame 11 are envisaged means for hanging the gar-

ments 14 to treated, for example hangers or shapes 15. Preferably, and as shown in Fig. 4, the hangers or shapes 15 can be dismantled and are also configured to be able to vary their dimensions, so that they are easy to fit inside the garment, suitable to support different sized clothes and principally, able to hold the garment hanging and taut with its front separated and held away from its rear - Fig. 3 - to facilitate both washing and successive drying. Inside the body or frame, a sprayer bar 17 is provided with a number of nozzles 16' positioned to produce jets of water, both for washing and rinsing, facing towards the items to be washed. The sprayer bar 17 can be horizontal and movable in height according to the items 14 placed in the machine, for example by means of translation cables. For a more efficient wash two horizontal sprayer bars 17 can be provided with nozzles facing in opposite directions towards the items to be treated. The opposing sprayer bar or bars could also be vertical and movable horizontally with regard to the items to be treated, and as an alternative there could also be at least one horizontal sprayer bar and another vertical sprayer bar on the same side or on opposite sides and both movable depending on the items involved.

[0020] In any case the sprayer bars are fed, for example, with water by means of flexible pipes, and the water nozzles can have variable and adjustable pressure depending on the fabric to be washed. Furthermore, all or at least some of the nozzles on each sprayer bar can also be the rotating type to further increase the efficiency of the washing process. In addition, nozzles for spraying water upwards from the bottom towards the top and inside the items can also be provided, together with means, if required, for moving the items with regard to the water jets.

[0021] What is more, in one or more sprayer bars the nozzles can be positioned in groups and fed with washing fluid so as to be able to use the nozzles of each group selectively and specifically, independently from the nozzles of every other group.

[0022] In addition and to its advantage, the treatment chamber 12 can be further provided with one or more rotating sprayer nozzles 18, 18' on a level with and aimed at the dirtier areas, in particular the collar and/or cuffs, of a garment to be washed. These nozzles will be, for example, the type to deliver a fan-shaped fluid spray, and their rotation can be brought about by the flow of the fluid delivered.

[0023] The machine described above can be programmed and run electronically to carry out the normal cleaning, washing and rinsing operations with the addition of a suitable cleaning product, water with detergent and clean water.

[0024] As regards to the washing phase, programming of the machine can also be conceived so that the water sprayers remain aimed, they pause and are active for a longer period on those areas which are considered to be the dirtiest of the items to be washed.

[0025] This specific treatment aspect can be exploited also to carry out directly in the machine the cleaning of certain parts of garments with the localized, manual or automatic addition of suitable solvents. In addition, each specific cleaning and washing treatment can be programmed so that it can be carried out both manually and automatically, by selecting the position, the number and the pressure of the water sprayers operating from time to time and an appropriate movement of the bar or bars of the sprayer nozzles.

[0026] In addition, the treatment chamber of the machine can be virtually divided and mapped out into several zones, and the water sprayers can from time to time be limited in number and directed only in one or some specific zones in the chamber and excluding others. This is done so as to specify the area occupied by each garment and to be able in this way to wash a single item positioned in any one of the zones of the treatment chamber without any unnecessary waste of water and detergent, rinsing water and energy.

[0027] Following the washing and rinsing operations, preceded by possible localized cleaning, the items are dried in the same machine with the help of hot air coming from the relative generator and possibly with the aid of an electric heater positioned in the treatment chamber. The air for drying may be delivered and distributed in the treatment chamber by means of appropriate ducts which may be either fixed or mobile or independent or associated with the sprayer bars. In this respect, at least a part of the rinsing water can be collected in the tank of the machine and the air for drying can be made to flow over said water to favour the condensation of the humidity it is carrying.

[0028] The ironing of the items takes place at the same time as they are dried, favoured by the fact that they are hanging, already taut and in shape during the washing process so that they do not crease and the same currents of air during drying tend to spread the materials, already spread however by the water, removing any remaining creases.

[0029] The machine described above can be set up and provided with means for carrying out on termination of the cleaning, washing, drying and ironing operations, the sterilization of the garments either by infrared radiation or by the help of a sterilization fluid or jets of steam, the latter being provided by appropriate nozzles - not shown - or by means of the same nozzles of the sprayer bars.

[0030] Finally, the machine described above can be set up in modular form so that it can be placed alongside one or more other modules, perhaps inside a mutual frame, so as to be able to set up machines from time to time with different capacities.

Claims

1. Multifunction machine for laundries, comprising:

- a body or frame (11) defining a treatment chamber (12) hermetically closed and equipped with means (15) for hanging elements (14), such as bed linen, clothes and garments, to be treated,
- means for a wash and rinse with the help of a fluid,
- means for drying and ironing said elements while they are hanging in said treatment chamber,

characterised in that said means (15) for hanging elements (14) are of different sizes to support different sized clothes and to hold each element (14), so that each element (14) is stretched, and its front is separated from its back.

2. Machine for laundries according to claim 1, in which the washing fluid is water and in the body or frame (11) *at* least one compartment is provided (13) housing equipment for involvement, distribution and discharge of the washing water, for loading and distribution of a detergent, for heating the water, plus a hot air generator to dry and iron the clothes and a control instrument.

3. Machine for laundries according to claim 2, in which the treatment chamber (12) is provided with at least one spray bar (16) with nozzles (16') to spray water towards the clothes to be treated, one spray bar at least being either horizontal or vertical and movable according to the clothes hanging and stretched in said treatment chamber.

4. Machine for laundries according to claim 3, comprising at least one rotating spray nozzle (18, 18') on a level with specific parts, in particular neck and/or cuffs, of an item to be washed.

5. Machine for laundries according to claims 3 or 4, in which, the treatment chamber is provided with two horizontal sprayer bars (17) to produce jets of water in opposite directions, said bars being movable in height in relation to the items hanging in said treatment chamber.

6. Machine for laundries according to claim 5, in which said sprayer bars are guided vertically and movable in parallel or independently one from the other.

7. Machine for laundries according to claim 5 or 6, in which, the treatment chamber (12) is provided with at least one vertical sprayer bar which is guided and movable horizontally in relation to the items hanging in said treatment chamber.

8. Machine for laundries according to any of the previous claims, provided with means for provoking the rotation of at least some water sprays and selectively varying the pressure of the water delivered.

9. Machine for laundries according to any of the previous claims, provided with means for selectively pointing and stopping at least some water jets in line with some parts of the items to be washed.

10. Machine for laundries according to any of the previous claims, in which every sprayer bar comprises groups of sprayer nozzles to be used selectively or simultaneously.

11. Machine for laundries according to any of the previous claims, comprising at least one nozzle for manual or automatic spraying of specific parts of the item to be treated with stain remover fluid.

12. Machine for laundries according to any of the previous claims comprising means for programming various operating cycles by choice of a number or sprayer movements and washing water pressure and drying and ironing times in the treatment chamber.

13. Machine for laundries according to claim 1, comprising means for involvement of a fluid for dry cleaning and means for collecting and re-use of the fluid.

14. Machine for laundries according to any of the previous claims in which the body or frame (11) is closed at least by a front transparent door.

Patentansprüche

1. Multifunktions-Maschine für Wäschereien:

- mit einem Körper oder Gehäuse (11), in dem sich eine luftdicht verschließbare Behandlungskammer (12) befindet, die mit Hängemitteln (15) ausgestattet ist, um daran Elemente (14) wie die zu behandelnde Wäsche- und Kleidungsstücke aufzuhängen;
- mit Mitteln zum Waschen und Spülen mit Hilfe von einer Flüssigkeit;
- mit Mitteln zum Trocknen und Bügeln dieser Elemente, die dabei in der erwähnten Behandlungskammer hängen bleiben,

dadurch gekennzeichnet, dass die erwähnten Hängemittel (15) zum Aufhängen der Elemente (14) verschiedenen Abmessungen haben, um Kleidungsstücke verschiedener Größe zu halten und jedes Element (14) so aufnehmen zu können, so dass die einzelnen Elemente (14) ausgestreckt und ihre Vorder- und Rückseite voneinander getrennt sind.

2. Maschine für Wäschereien nach Anspruch 1, **dadurch gekennzeichnet, dass** die Reinigungsflüssigkeit Wasser ist und im Körper oder Gehäuse (11)

zumindest ein Hohlraum (13) vorgesehen ist, in dem Vorrichtungen für die Zufuhr, die Verteilung und die Entfernung des Waschwassers, für das Zufuhr mit Reinigungsmittel und dessen Verteilen, für das Erhitzen des Wassers sowie ein Heißluftgenerator zum Trocknen und Bügeln der Kleidungsstücke und eine Steuervorrichtung gelagert sind.

3. Maschine für Wäschereien nach Anspruch 2, **dadurch gekennzeichnet, dass** in der Behandlungskammer (12) zumindest eine Spritzleiste (16) mit Düsen (16') vorgesehen ist, um die zu behandelnden Kleidungsstücke mit Wasser zu bespritzen; wobei zumindest eine Spritzleiste, horizontal oder vertikal angeordnet werden kann und entsprechend den in der genannten Behandlungskammer hängenden Kleidungsstücken verschiebbar ist.

4. Maschine für Wäschereien nach Anspruch 3, **dadurch gekennzeichnet, dass** zumindest einer Düse für eine rotierende Spritzeinrichtung (18, 18') im bestimmter Stellen, insbesondere bei Kragens und/ oder bei Manschetten eines zu behandelnden Kleidungsstücks vorgesehen ist.

5. Maschine für Wäschereien nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** in der Behandlungskammer zwei horizontale Spritzleisten (17) vorgesehen sind, die einen Wasserstrahl in entgegengesetzte Richtungen erzeugen. Diese Leisten sind entsprechend den in der erwähnten Behandlungskammer hängenden Kleidungsstücken höhenverschiebbar.

6. Maschine für Wäschereien nach Anspruch 5, **dadurch gekennzeichnet, dass** die erwähnten Spritzleisten vertikal gesteuert werden und parallel bzw. unabhängig voneinander verschiebbar sind.

7. Maschine für Wäschereien nach Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** in der Behandlungskammer zumindest eine vertikale Spritzleiste (17) vorgesehen ist, die gesteuert wird und entsprechend den in der erwähnten Behandlungskammer hängenden Kleidungsstücken horizontal verschiebbar ist.

8. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie mit Vorrichtungen vorgesehen ist, welche die Rotation von zumindest einigen Wasserstrahlen bewirken und den abgegebenen Wasserdruck selektiv variieren lassen.

9. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie mit Mitteln vorgesehen ist, um zumindest einige Wasserstrahlen entsprechend verschiedener Stellen der zu waschenden Kleidungsstücke selektiv zu richten und zu halten.

10. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** jede Spritzleiste eine Gruppe von Spritzdüsen umfasst, die selektiv oder gleichzeitig verwendet werden können.

11. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche **dadurch gekennzeichnet, dass** zumindest eine Düse zum manuellen oder automatischen Besprühen bestimmter Teile des zu behandelnden Kleidungsstücks mit Fleckentferner vorgesehen ist.

12. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche **dadurch gekennzeichnet, dass** sie mit Mitteln zum Programmieren von Arbeitszyklen durch eine Wahl der Nummern bzw. der Spritzbewegungen und des Waschwasser-Drucks sowie der Trocknungs- und Bügelzeiten in der Behandlungskammer vorgesehen ist.

13. Maschine für Wäschereien nach Anspruch 1 **dadurch gekennzeichnet, dass** sie mit Mitteln für die Zufuhr von Reinigungsmittel für die chemische Reinigung, sowie mit Mitteln zum Ableiten und Wiederverwenden des genannten Reinigungsmittels vorgesehen ist.

14. Maschine für Wäschereien nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Körper oder das Gehäuse (11) von zumindest einer transparenten Vordertür abgeschlossen ist.

Revendications

1. Machine multifonctions pour blanchisseries, comprenant:

- un corps ou carcasse (11) renfermant une chambre de traitement (12) fermable hermétiquement et dotée de moyens (15) permettant de pendre des éléments (14), comme du linge, des pièces d'habillement et des vêtements à traiter,
- moyens de lavage et de rinçage à l'aide d'un fluide,
- moyens de séchage et de repassage de ces éléments qui restent pendus dans la chambre de traitement,

caractérisé en ce que ces moyens (15) servant à suspendre les éléments (14) sont de dimensions variables afin de pouvoir recevoir des articles de différentes tailles et pour tenir chaque

élément (14), afin que celui-ci (14) puisse être étendu et que sa partie avant se retrouve séparée de sa partie arrière.

2. Machine pour blanchisseries selon la revendication 1, dans laquelle le fluide de lavage est eau et dont le corps ou carcasse (11) est muni d'au moins un compartiment (13) destiné à recevoir des équipements pour l'arrivée, la distribution et l'évacuation de l'eau de lavage, pour un apport et une distribution d'un détersif, pour un réchauffement de l'eau ainsi qu'un générateur d'air chaude servant à sécher et repasser les articles et un dispositif de contrôle.

3. Machine pour blanchisseries selon la revendication 2, dans laquelle la chambre de traitement (12) est munie d'au moins une barre d'embrun (16) dotée de buses (16') qui projettent l'eau en direction des articles à traiter, au moins une barre de pulvérisation pouvant être horizontale ou verticale et mobile en fonction des articles suspendus et étendus dans ladite chambre de traitement.

4. Machine pour blanchisseries selon la revendication 3, comprenant au moins une buse d'embrun rotative (18, 18') située au niveau de zones spécifiques, notamment le col et/ou les poignets d'un article à laver.

5. Machine pour blanchisseries selon les revendications 3 ou 4, dans laquelle la chambre de traitement est équipée de deux barres d'embrun horizontales (17) qui produisent des jets d'eau dans des directions opposées, dont ces barres sont mobiles en hauteur selon les articles suspendus dans ladite chambre de traitement.

6. Machine pour blanchisseries selon la revendication 5, dans laquelle les barres d'embrun sont guidées verticalement et mobiles parallèlement ou indépendamment l'une de l'autre.

7. Machine pour blanchisseries selon revendications 5 ou 6, dans laquelle la chambre de traitement (12) est munie d'au moins une barre d'embrun verticale guidée et mobile horizontalement selon les articles suspendus dans ladite chambre de traitement.

8. Machine pour blanchisseries selon à n'importe quelle revendication précédente, munie de moyens pouvant générer la rotation de certains jets d'eau et pulvériser l'eau à des pressions variables.

9. Machine pour blanchisseries selon à n'importe quelle revendication précédente, munie de mayens pouvant diriger et arrêter sélectivement certains jets d'eau sur certaines parties des articles à laver.

10. Machine pour blanchisseries selon à n'importe quelle revendication précédente, dans laquelle chaque barre d'embrun comprend des groupes de buses d'embrun pouvant être actionnés séparément ou simultanément.

11. Machine pour blanchisseries selon à n'importe quelle revendication précédente, comprenant au moins une buse d'embrun manuelle ou automatique du fluide de nettoyage sur des parties spécifiques de l'article à traiter.

12. Machine pour blanchisseries selon à n'importe quelle revendication précédente, munie de moyens servant à programmer différents cycles de travail en sélectionnant le nombre et les mouvements des buses ainsi que la pression de l'eau de lavage et les temps de séchage et de repassage dans la chambre de traitement.

13. Machine pour blanchisseries selon la revendication 1, comprenant des moyens d'apport de fluide pour les lavages à sec ainsi que des dispositifs servant à recueillir et réutiliser ce fluide.

14. Machine pour blanchisseries selon à n'importe quelle revendication précédente, dans laquelle le corps ou carcasse (11) est fermée par au moins une porte frontale transparente.

FIG. 1

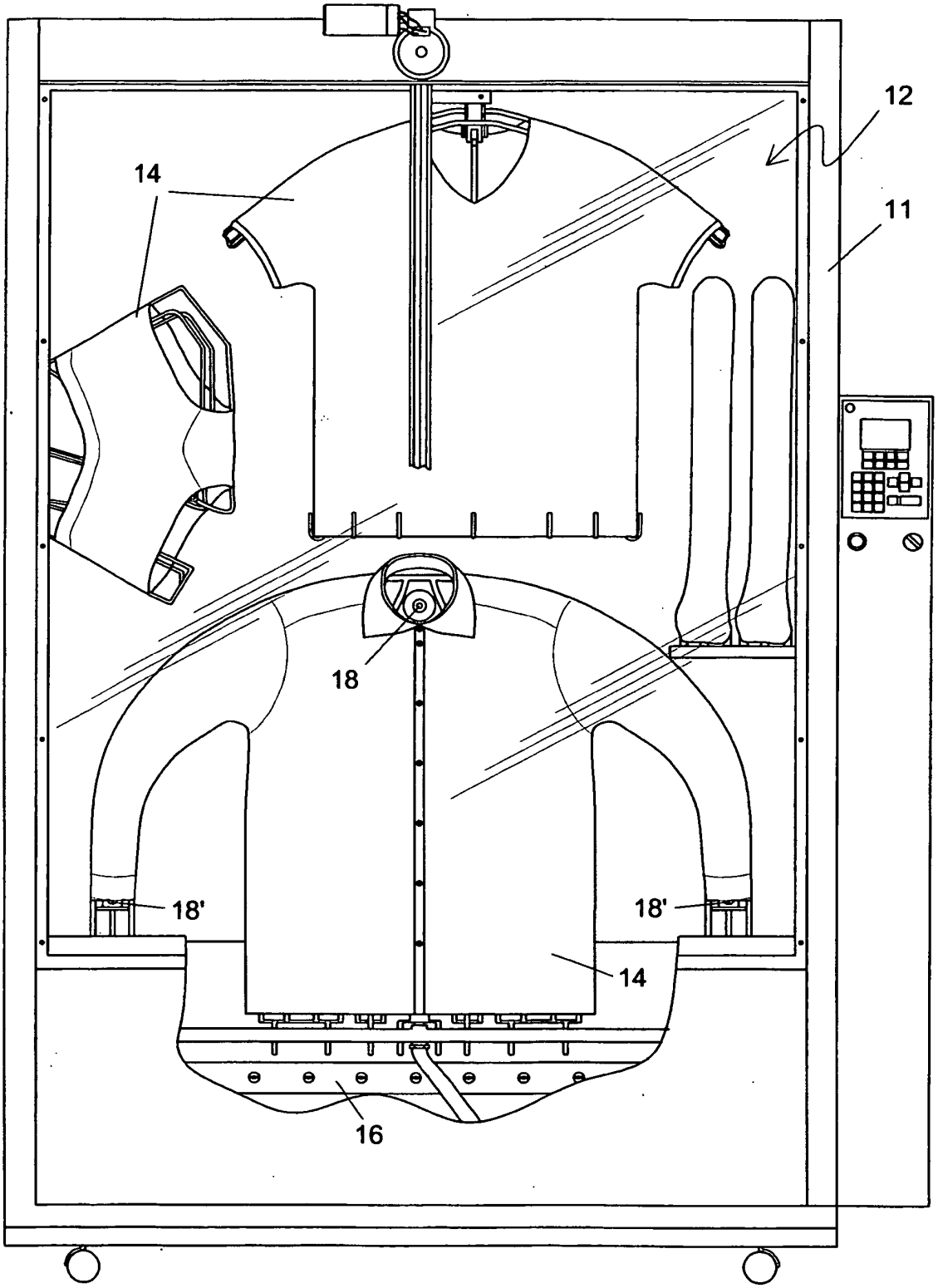


FIG. 2

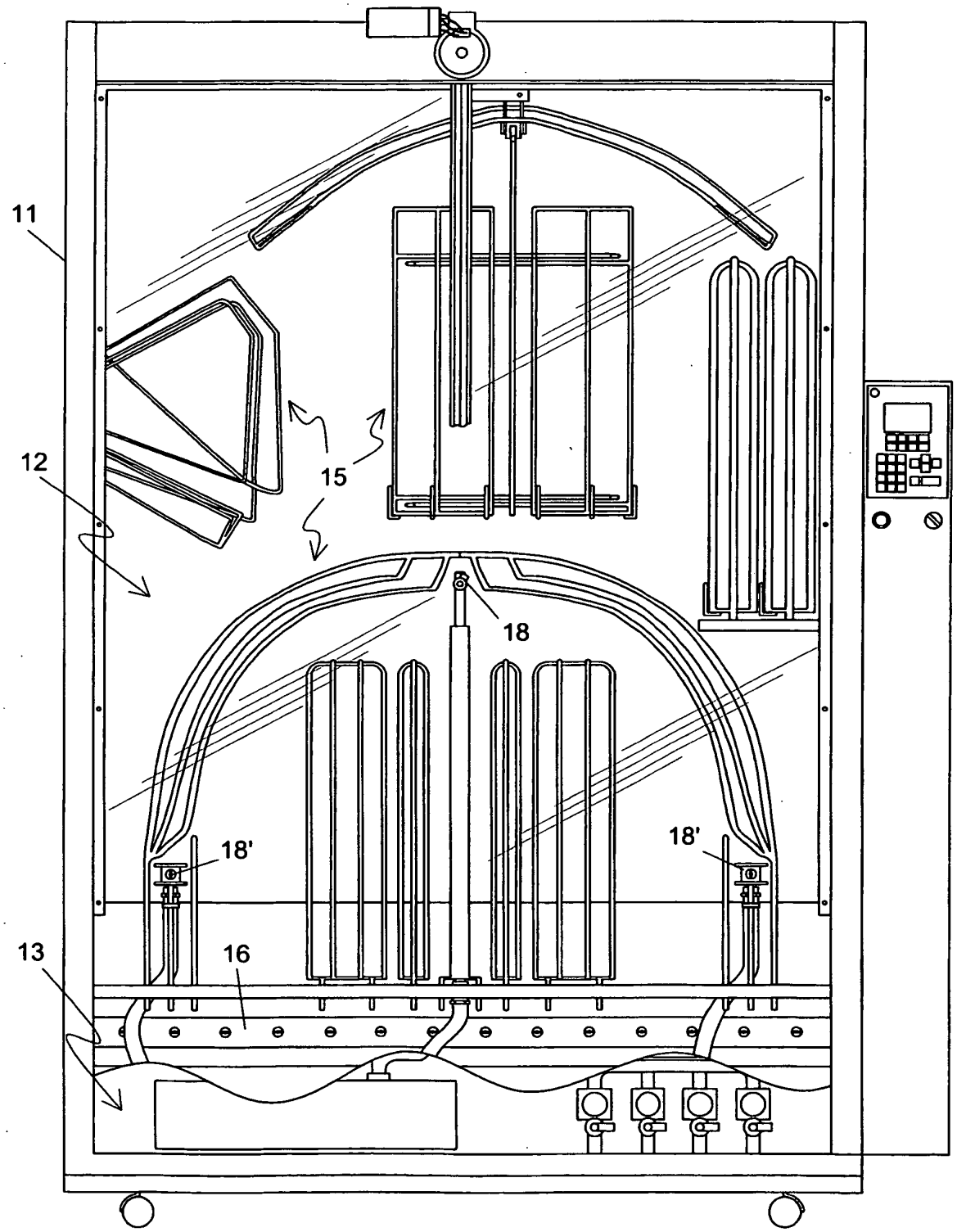


FIG. 3

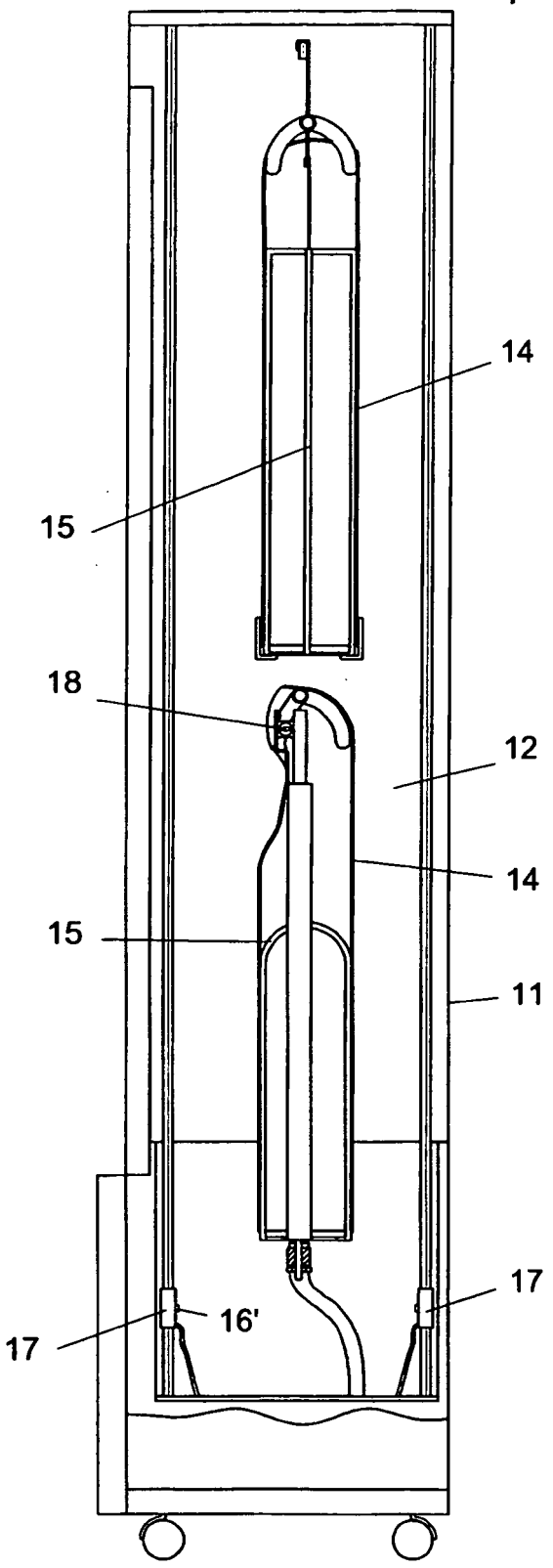
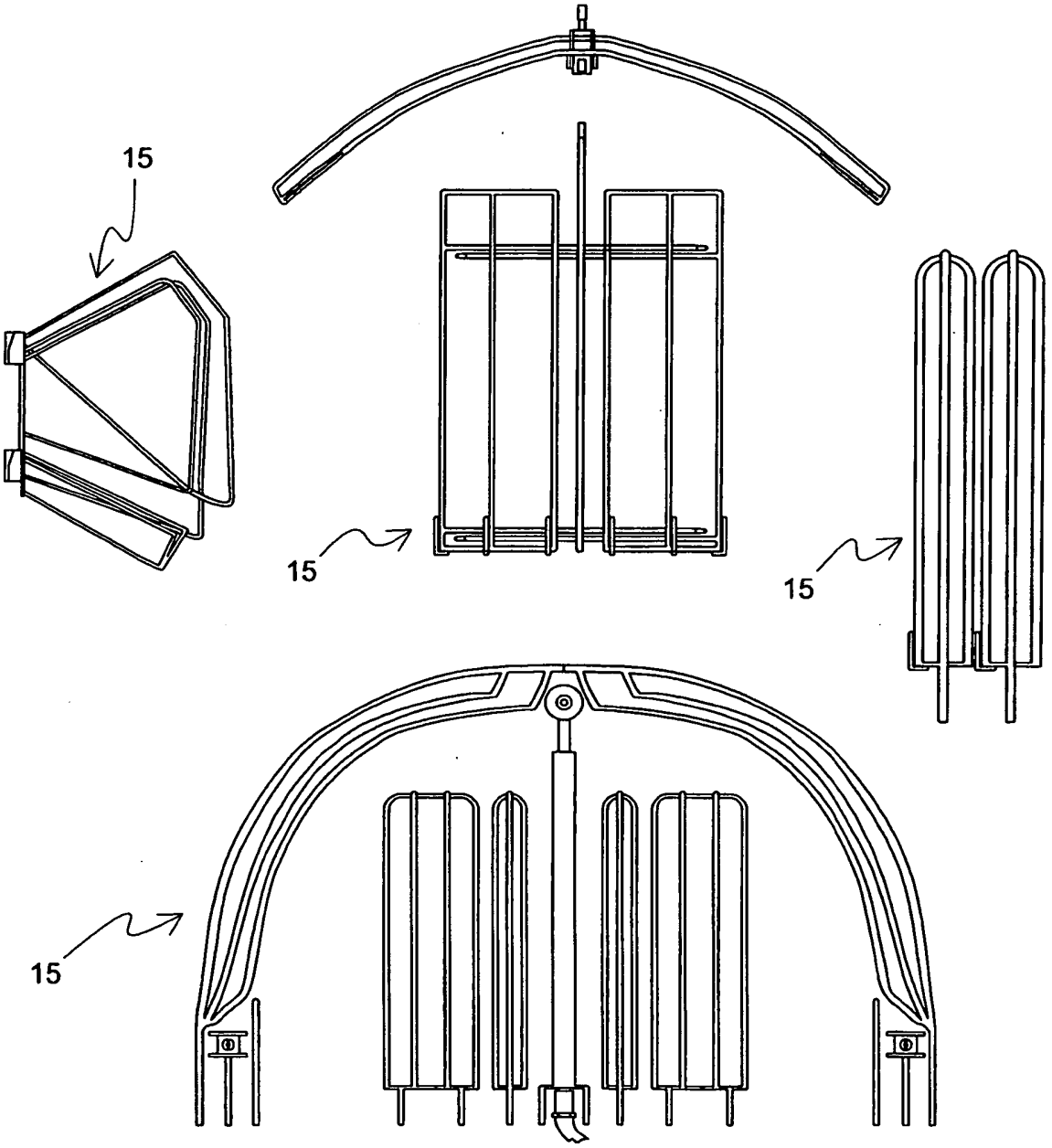


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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